Chemical Analysis Report

CEN-DIST-2017-01-10-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

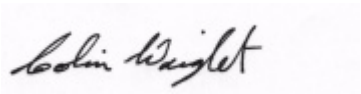
Event Description: **Horse Creek x2/Elbow Creek**
Request ID: **RQ-2017-01-09-30**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 01-FEB-2017 11:37



Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals and Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

A - Value reported is the mean of two or more determinations.
B - Results based on colony counts outside the acceptable range.
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J - Estimated value and/or the analysis did not meet established quality control criteria.
K - Actual value is known to be less than value given.
L - Actual value is known to be greater than value given.
N - Presumptive evidence of presence of material.
O - Sampled, but analysis lost or not performed.
Q - Sample held beyond normal holding time.
T - Value reported is less than the criterion of detection.
U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
V - Analyte was detected in both sample and method blank.
X - Too few individuals to calculate SCI value.
Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: ELBOW CREEK AT 540M DOWNSTREAM OF APOLLO **Collection Date/Time: 01/09/2017 10:35**

Field ID: G5CE0070 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1862399	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P318045	
	EPA 300.0 Rev. 2.1	Chloride	95		mg Cl/L	P318273	
		Sulfate	32		mg SO4/L	P318275	
	SM 2120 B	Color (true)	77	A	PCU	P318042	
	SM 2320 B-97	Total Alkalinity	138		mg CaCO3/L	P318280	
	SM 2540 C-97	TDS	407	A	mg/L	P318597	
	SM 2540 D-97	TSS	5	I	mg/L	P318543	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P318284	
1862400	EPA 350.1 Rev. 2.0	Ammonia-N	0.098		mg N/L	P318130	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.68		mg N/L	P318064	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P318245	
	EPA 365.1 Rev. 2.0	Total-P	0.076		mg P/L	P318161	MS
	SM 5310 B-00	Organic Carbon	15		mg C/L	P318257	
1862401	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.058		mg P/L	P318058	

Ref. Method and Comment:
EPA 180.1 Rev. 2.0: The precision data is unavailable due to the small amount of analyte in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: HORSE CREEK W OF US HIGHWAY 1 BRIDGE **Collection Date/Time: 01/09/2017 10:50**

Field ID: G5CE0071 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1862393	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P318045	
	SM 2320 B-97	Total Alkalinity	120	A	mg CaCO3/L	P318281	
	SM 2540 D-97	TSS	7	I	mg/L	P318549	
	SM 4500 F-C-97	Fluoride	0.79		mg F/L	P318285	
1862395	EPA 350.1 Rev. 2.0	Ammonia-N	0.13		mg N/L	P318134	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P318194	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.075		mg N/L	P318229	
	EPA 365.1 Rev. 2.0	Total-P	0.084		mg P/L	P318160	
	SM 5310 B-00	Organic Carbon	14		mg C/L	P318259	
1862397	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.048		mg P/L	P318060	
1862405	EPA 200.7 Rev. 4.4	Iron	170	I	ug/L	P318097	
	EPA 200.8 Rev. 5.4	Arsenic	2.7	I	ug/L	P318097	
		Cadmium	0.15	U	ug/L	P318097	
		Chromium	0.90	U	ug/L	P318097	
		Copper	1.5	U	ug/L	P318097	
		Lead	0.60	U	ug/L	P318097	
		Nickel	0.75	U	ug/L	P318097	
		Silver	0.075	U	ug/L	P318097	
		Zinc	15	U	ug/L	P318097	

Field ID: G5CE0071 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes

Ref. Method and Comment:
EPA 180.1 Rev. 2.0: The precision data is unavailable due to the small amount of analyte in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: HORSE CREEK @ CROTON ROAD BRIDGE **Collection Date/Time: 01/09/2017 11:05**

Field ID: G5CE0078 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1862394	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P318045	
	SM 2320 B-97	Total Alkalinity	102		mg CaCO3/L	P318280	
	SM 2540 D-97	TSS	4	I	mg/L	P318547	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P318284	
1862396	EPA 350.1 Rev. 2.0	Ammonia-N	0.058		mg N/L	P318130	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83		mg N/L	P318064	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.26		mg N/L	P318245	
	EPA 365.1 Rev. 2.0	Total-P	0.083		mg P/L	P318161	MS
	SM 5310 B-00	Organic Carbon	17		mg C/L	P318257	
1862398	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.065		mg P/L	P318058	
1862406	EPA 200.7 Rev. 4.4	Iron	130		ug/L	P318193	
		Zinc	5.0	U	ug/L	P318193	
	EPA 200.8 Rev. 5.4	Arsenic	2.30		ug/L	P318193	
		Cadmium	0.020	U	ug/L	P318193	
		Chromium	0.64		ug/L	P318193	
		Copper	0.84		ug/L	P318193	
		Lead	0.21		ug/L	P318193	
		Nickel	0.53		ug/L	P318193	
		Silver	0.0050	U	ug/L	P318193	

Ref. Method and Comment:
EPA 180.1 Rev. 2.0: The precision data is unavailable due to the small amount of analyte in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P318045

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P318097

Component	Result	Code	Units
Iron	30	U	ug/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P318193

Component	Result	Code	Units
Iron	30	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P318097

Component	Result	Code	Units
Arsenic	0.25	U	ug/L
Cadmium	0.050	U	ug/L
Chromium	0.30	U	ug/L
Copper	0.50	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.25	U	ug/L
Silver	0.025	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P318193

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318273

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318275

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318130

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318134

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318064

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318194

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318229

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318245

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318160

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318161

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318058

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318060

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: SM 2120 B
Batch ID: P318042

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P318280

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2320 B-97
Batch ID: P318281

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 C-97
Batch ID: P318597

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P318543

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P318547

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P318549

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P318284

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P318285

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P318257

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P318259

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P318097

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	101		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P318193

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	107		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P318097

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	97.9		P	80 - 120
Cadmium	97.0		P	80 - 120
Chromium	97.5		P	80 - 120
Copper	97.3		P	80 - 120
Lead	97.9		P	80 - 120
Nickel	90.3		P	80 - 120
Silver	93.8		P	80 - 120
Zinc	95.3		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P318193

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	101		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	99.8		P	85 - 115
Copper	98.4		P	85 - 115
Lead	105		P	85 - 115
Nickel	100		P	85 - 115
Silver	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318273

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.8		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318275

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318130

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318134

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318064

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318194

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	100		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318229

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318245

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318160

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318161

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.4		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318058

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318060

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.6		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P318280

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P318281

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P318284

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.4		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P318285

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P318257

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.2		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P318259

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P318097

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P318097

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861126	Iron	97.8		P	70 - 130
1861127	Iron	97.6	99.1	P/P	70 - 130

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P318193

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862487	Iron	108		P	80 - 120
1862487	Zinc	101		P	80 - 120
1863452	Iron	110	108	P/P	80 - 120
1863452	Zinc	99.4	99.3	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P318097

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861126	Arsenic	96.2		P	70 - 130
1861126	Cadmium	90.9		P	70 - 130
1861126	Chromium	97.9		P	70 - 130
1861126	Copper	94.0		P	70 - 130
1861126	Lead	100		P	70 - 130
1861126	Nickel	85.1		P	70 - 130
1861126	Silver	88.8		P	70 - 130
1861126	Zinc	89.5		P	70 - 130
1861127	Arsenic	91.1	94.3	P/P	70 - 130
1861127	Cadmium	86.8	91.8	P/P	70 - 130
1861127	Chromium	91.0	94.3	P/P	70 - 130
1861127	Copper	89.3	91.9	P/P	70 - 130
1861127	Lead	95.7	97.6	P/P	70 - 130
1861127	Nickel	94.0	90.6	P/P	70 - 130
1861127	Silver	85.3	89.3	P/P	70 - 130
1861127	Zinc	84.1	86.6	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P318193

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862487	Arsenic	101		P	80 - 120
1862487	Cadmium	101		P	80 - 120
1862487	Chromium	98.7		P	80 - 120
1862487	Copper	95.0		P	80 - 120
1862487	Lead	101		P	80 - 120
1862487	Nickel	97.3		P	80 - 120
1862487	Silver	100		P	80 - 120
1863452	Arsenic	101	102	P/P	80 - 120
1863452	Cadmium	101	98.0	P/P	80 - 120
1863452	Chromium	98.2	97.5	P/P	80 - 120
1863452	Copper	95.6	95.4	P/P	80 - 120
1863452	Lead	99.3	98.3	P/P	80 - 120
1863452	Nickel	98.3	98.5	P/P	80 - 120
1863452	Silver	101	99.5	P/P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318273

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862424	Chloride	98.1		P	90 - 110
1862470	Chloride	99.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318275

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862424	Sulfate	98.1		P	90 - 110
1862470	Sulfate	96.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318064

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862426	Kjeldahl Nitrogen	98.9	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1863005	Kjeldahl Nitrogen	95.7	97.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318229

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861993	NO2NO3-N	105	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318245

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862135	NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318160

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862395	Total-P	93.6	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318161

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862427	Total-P	88.9	88.6	F/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318058

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862383	O-Phosphate-P	95.9	96.0	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318060

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862397	O-Phosphate-P	96.1	98.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P318284

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862421	Fluoride	96.7	97.2	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P318285

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862393	Fluoride	95.0	95.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P318257

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862381	Organic Carbon	95.2	95.3	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P318259

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1862395	Organic Carbon	91.6	93.5	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P318097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861127	Iron	1.47	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P318193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863452	Iron	1.05	Spike	P	0 - 20
1863452	Zinc	0.188	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P318097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861127	Arsenic	3.34	Spike	P	0 - 20
1861127	Cadmium	5.60	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P318097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861127	Chromium	3.56	Spike	P	0 - 20
1861127	Copper	2.94	Spike	P	0 - 20
1861127	Lead	1.98	Spike	P	0 - 20
1861127	Nickel	3.68	Spike	P	0 - 20
1861127	Silver	4.58	Spike	P	0 - 20
1861127	Zinc	2.93	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P318193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863452	Arsenic	0.262	Spike	P	0 - 20
1863452	Cadmium	3.09	Spike	P	0 - 20
1863452	Chromium	0.655	Spike	P	0 - 20
1863452	Copper	0.206	Spike	P	0 - 20
1863452	Lead	0.944	Spike	P	0 - 20
1863452	Nickel	0.278	Spike	P	0 - 20
1863452	Silver	1.21	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318273

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862424	Chloride	0.131	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318275

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862424	Sulfate	2.31	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318130

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862396	Ammonia-N	0.171	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318134

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862395	Ammonia-N	1.02	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318064

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862426	Kjeldahl Nitrogen	1.81	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1863005	Kjeldahl Nitrogen	1.75	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318229

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861993	NO2NO3-N	0.922	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318245

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862135	NO2NO3-N	1.93	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318160

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862395	Total-P	1.52	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862427	Total-P	0.376	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318058

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862383	O-Phosphate-P	0.0993	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318060

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862397	O-Phosphate-P	1.31	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P318042

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862399	Color (true)	2.66	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P318280

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862421	Total Alkalinity	0.555	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P318281

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862393	Total Alkalinity	0.268	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P318597

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862399	TDS	3.93	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P318284

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862421	Fluoride	0.490	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P318285

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862393	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P318257

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862381	Organic Carbon	0.0503	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P318259

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1862395	Organic Carbon	1.52	Spike	P	0 - 20

Quality Assurance Report
Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Calibration Verification

Reference Method: SM 2120 B
Run ID: A73853
Included Lab Sample IDs: 1862399

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.0	98.6	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A73854
Included Lab Sample IDs: 1862393, 1862394, 1862399

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.5	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A73859
Included Lab Sample IDs: 1862397, 1862398, 1862401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.7	98.3	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A73881
Included Lab Sample IDs: 1862399

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.6	99.6	P/P	90 - 110
Sulfate	95.9	98.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A73884
Included Lab Sample IDs: 1862395, 1862396, 1862400

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	101	P/P	90 - 110
Ammonia-N	99.2	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A73894
Included Lab Sample IDs: 1862395

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.5	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73907
Included Lab Sample IDs: 1862396, 1862400

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73907
Included Lab Sample IDs: 1862396, 1862400

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A73921
Included Lab Sample IDs: 1862396, 1862400

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A73922
Included Lab Sample IDs: 1862395

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.0	98.5	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A73930
Included Lab Sample IDs: 1862395, 1862396, 1862400

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.8	96.3	P/P	90 - 110
Organic Carbon	97.0	97.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A73932
Included Lab Sample IDs: 1862405

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.5	94.6	P/P	90 - 110
Cadmium	99.8	97.7	P/P	90 - 110
Chromium	100	97.1	P/P	90 - 110
Copper	95.5	93.0	P/P	90 - 110
Lead	97.7	95.0	P/P	90 - 110
Silver	97.1	95.9	P/P	90 - 110
Zinc	97.2	94.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A73935
Included Lab Sample IDs: 1862405

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	95.4	95.3	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A73938
Included Lab Sample IDs: 1862393, 1862394, 1862399

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	103	P/P	90 - 110
Total Alkalinity	104	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A73938
Included Lab Sample IDs: 1862393, 1862394, 1862399

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A73942
Included Lab Sample IDs: 1862396, 1862400

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73948
Included Lab Sample IDs: 1862395

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	96.3	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A73953
Included Lab Sample IDs: 1862405

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Nickel	93.7	96.8	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A73958
Included Lab Sample IDs: 1862406

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	101	102	P/P	90 - 110
Zinc	102	97.8	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A74039
Included Lab Sample IDs: 1862406

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	99.1	99.2	P/P	90 - 110
Cadmium	97.9	97.9	P/P	90 - 110
Chromium	98.7	97.7	P/P	90 - 110
Copper	108	108	P/P	90 - 110
Nickel	99.1	98.9	P/P	90 - 110
Silver	102	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A74057
Included Lab Sample IDs: 1862406

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	104	100	P/P	90 - 110

Quality Assurance Report
Calibration Verification

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 200.7 Rev. 4.4	Iron	101	97.8	97.6	99.1			1.47
	Iron	107	108	110	108			1.05
	Zinc	101	101	99.4	99.3			0.188
EPA 200.8 Rev. 5.4	Arsenic	97.9	96.2	91.1	94.3			3.34
	Arsenic	101	101	101	102			0.262
	Cadmium	97.0	90.9	86.8	91.8			5.60
	Cadmium	100	101	101	98.0			3.09
	Chromium	97.5	97.9	91.0	94.3			3.56
	Chromium	99.8	98.7	98.2	97.5			0.655
	Copper	97.3	94.0	89.3	91.9			2.94
	Copper	98.4	95.0	95.6	95.4			0.206
	Lead	97.9	100	95.7	97.6			1.98
	Lead	105	101	99.3	98.3			0.944
	Nickel	90.3	85.1	94.0	90.6			3.68
	Nickel	100	97.3	98.3	98.5			0.278
	Silver	93.8	88.8	85.3	89.3			4.58
	Silver	101	100	101	99.5			1.21
	Zinc	95.3	89.5	84.1	86.6			2.93
EPA 300.0 Rev. 2.1	Chloride	99.8	98.1	99.2			0.131	
	Sulfate	97.6	98.1	96.5			2.31	
EPA 350.1 Rev. 2.0	Ammonia-N	99.7						0.171
	Ammonia-N	98.3						1.02
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.5	98.9	101				1.81
	Kjeldahl Nitrogen	100	95.7	97.9				1.75
EPA 353.2 Rev. 2.0	NO2NO3-N	104	105	106				0.922
	NO2NO3-N	104	102	104				1.93
EPA 365.1 Rev. 2.0	Total-P	96.3	93.6	95.2				1.52
	Total-P	94.4	88.9	88.6				0.376
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.7	95.9	96.0				0.0993
	O-Phosphate-P	98.6	96.1	98.0				1.31
SM 2120 B	Color (true)						2.66	
SM 2320 B-97	Total Alkalinity	104					0.555	
	Total Alkalinity	103					0.268	
SM 2540 C-97	TDS						3.93	
SM 4500 F-C-97	Fluoride	97.4	96.7	97.2				0.490
	Fluoride	96.9	95.0	95.0				0.0
SM 5310 B-00	Organic Carbon	93.2	95.2	95.3				0.0503
	Organic Carbon	93.8	91.6	93.5				1.52

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1862393, 1862394, 1862399
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1862405, 1862406

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1862405, 1862406
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1862399
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1862399
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1862395, 1862396, 1862400
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1862395, 1862396, 1862400
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1862395, 1862396, 1862400
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1862395, 1862396, 1862400
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1862397, 1862398, 1862401
SM 2120 B / E31780	True Color measured at 450 nm	1862399
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1862393, 1862394, 1862399
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1862399
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1862393, 1862394, 1862399
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1862393, 1862394, 1862399
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1862395, 1862396, 1862400

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	01/10/2017			01/10/2017 15:20	Julie Michelle Frank	1862393, 1862394, 1862399
EPA 200.7 Rev. 4.4	01/10/2017	01/11/2017	Elliott D. Healy	01/13/2017	Joshua Ayres	1862405
	01/10/2017	01/12/2017	Elliott D. Healy	01/17/2017	Joshua Ayres	1862406
EPA 200.8 Rev. 5.4	01/10/2017	01/11/2017	Elliott D. Healy	01/13/2017	Robert K Palmer	1862405
	01/10/2017	01/11/2017	Elliott D. Healy	01/17/2017	Robert K Palmer	1862405
	01/10/2017	01/12/2017	Elliott D. Healy	01/19/2017	Betina Topolski	1862406
	01/10/2017	01/12/2017	Elliott D. Healy	01/23/2017	Betina Topolski	1862406
EPA 300.0 Rev. 2.1	01/10/2017			01/13/2017	Ping Hua	1862399
EPA 350.1 Rev. 2.0	01/10/2017			01/11/2017	Sofia Elnemr	1862395, 1862396, 1862400
EPA 351.2 Rev. 2.0	01/10/2017	01/11/2017	Adrian Shelby	01/12/2017	Joseph Suarez	1862396, 1862400
	01/10/2017	01/13/2017	Adrian Shelby	01/17/2017	Joseph Suarez	1862395
EPA 353.2 Rev. 2.0	01/10/2017			01/12/2017	Beverly Y. Sanders	1862395
	01/10/2017			01/13/2017	Beverly Y. Sanders	1862396, 1862400
EPA 365.1 Rev. 2.0	01/10/2017	01/12/2017	Vijayalakshmi Reddy	01/12/2017	Lipi Saha	1862396, 1862400
	01/10/2017	01/12/2017	Vijayalakshmi Reddy	01/13/2017	Lipi Saha	1862395
EPA 365.1 Rev. 2.0 dissolved	01/10/2017			01/10/2017 16:27	Ping Hua	1862397
	01/10/2017			01/10/2017 16:31	Ping Hua	1862398
	01/10/2017			01/10/2017 16:32	Ping Hua	1862401
SM 2120 B	01/10/2017			01/10/2017 14:09	Jared I. Manley	1862399
SM 2320 B-97	01/10/2017			01/12/2017	Dale L. Simmons	1862393, 1862394, 1862399
SM 2540 C-97	01/10/2017			01/13/2017	Yijie Li	1862399
SM 2540 D-97	01/10/2017			01/13/2017	Yijie Li	1862393, 1862394, 1862399
SM 4500 F-C-97	01/10/2017			01/12/2017	Dale L. Simmons	1862393, 1862394, 1862399
SM 5310 B-00	01/10/2017			01/12/2017	Julie Michelle Frank	1862396, 1862400
	01/10/2017			01/13/2017	Julie Michelle Frank	1862395